

## PLATE XV.

- Fig. 1. *Luffariella geometrica*, sp. n.  
 a. Natural size.  
 b. Section,  $\times 10$ .  
 c. Dermal skeleton,  $\times 25$ .  
 Fig. 2. *Polyfibrospongia Sweeti*, sp. n.  
 a. Natural size.  
 b. Section,  $\times 25$ .  
 c. Wall of oscular tube,  $\times 15$ .  
 d. Bundle of fibres teased out,  $\times 250$ .  
 Fig. 3. *Chondropsis ceratosus*, sp. n.  
 a. Skeletal network,  $\times 25$ .  
 b. Sigmata,  $\times 125$ .  
 c. Oxeum,  $\times 125$ .

XLIV.—*The Scorpions of the Genus Heterometrus.*

By R. I. Pocock.

PROF. KRAEPELIN (Das Tierr., Scorp. p. 124, 1899) recognizes, under the name *Scorpio*\*, two species of the genus *Heterometrus*, namely *maurus* and *Boehmi*, a form referred on the authority of Birula to *testaceus* of C. Koch, from Syria, being regarded as doubtfully distinct. To the synonymy of *maurus* is added *palmatus* of Ehrenberg and *propinquus* of Simon, the latter being qualified with a mark of interrogation.

An examination of the material at my disposal has led me to conclusions by no means in accord with those contained in 'Tierreich.' *H. Boehmi* and *H. propinquus* are unknown to me; but including the latter I recognize the following four species as occurring in the area inhabited, according to Prof. Kraepelin, by the one form *maurus*:—

(1) *Heterometrus maurus* (Linn.).

*Scorpio maurus*, Linn. Syst. Nat. ed. 10, p. 624 (1758).

*Buthus testaceus*, C. Koch, Die Arachn. v. p. 3, fig. 259 (1839).

*Scorpio maurus*, Kraepelin, Das Tierr., Scorp. etc. p. 124 (1899) (in part.).

\* The system, if any, of determining the type species of genera, which is adopted by Prof. Kraepelin, and presumably sanctioned by the Tierreich-Committee, is most puzzling. By elimination *maurus* is not the type species of *Scorpio*, since it was removed from that genus under the name *palmatus* by Hemprich and Ehrenberg and fixed on to *Heterometrus* by Thorell (Ann. & Mag. Nat. Hist. (4) xvii. p. 2, 1876). If it be regarded as the type of *Scorpio* on the strength of standing first under that heading in the 10th edition of the 'Systema,' it must for the same reason be regarded as the type of *Heterometrus*. In that case *Heterometrus* must be a synonym of *Scorpio*. Prof. Kraepelin, however, retains by elimination the name *Heterometrus* for the second species it originally contained, namely *spinifer*.

*Loc.* Marocco and Algeria. The British Museum has many examples from Tangier (*B. B. Woodward, &c.*), Cape Spartel (*T. Annandale*), Tunis, and Algiers.

(2) *Heterometrus palmatus*, Hempr. & Ehrenb.

*Heterometrus palmatus*, Hempr. & Ehrenb. Symb. Phys., Scorpiones, no. 1 (1829).

*Heterometrus palmatus flavus* and ? *rufus*, iid. ibid.

*Scorpio maurus*, Kraepelin, *op. cit.* (in part.).

*Loc.* Egypt: Cairo (*Dr. Anderson*).

Hemprich and Ehrenberg recognized two varieties of the Egyptian species—one from Alexandria, which was named *flavus*; the other from Sinai, named *rufus*. I have seen no examples from Sinai, but a single male specimen from Cairo (*Dr. Anderson*), which is doubtless referable to *H. palmatus flavus*, belongs to quite a distinct species from the Algerian *H. maurus*.

(3) *Heterometrus fuscus*, Hempr. & Ehrenb.

*Heterometrus palmatus fuscus*, Hempr. & Ehrenb. Symb. Phys., Scorp. no. 1 (1829); Simon, Ann. Soc. Ent. Fr. (5) ii. p. 258 (1872).

*Heterometrus palmatus*, var. *minor*, Simon, ibid.

*Heterometrus testaceus*, Birula, Horæ Soc. Ent. Ross. xxxiii. p. 138 (1893); Kraepelin, *op. cit.* (nec *testaceus*, C. Koch).

*Loc.* Syria: Jerusalem (*Herr Rolle*), Tiberias (*A. Smith Woodward*), &c.

Birula seems to have recognized the distinctness of the Syrian species, but erroneously used the name *testaceus* for it: *testaceus* was applied by C. Koch to a specimen from Algeria co-specific with *maurus* of Linn.

(4) *Heterometrus propinquus*, Simon.

*Heterometrus propinquus*, Simon, Ann. Soc. Ent. Fr. (5) ii. p. 259 (1872).

*Loc.* Syria: Damascus and Nablous.

This species is said to differ from the preceding (*H. fuscus*) in having the median eyes larger, the vesicle more globular, and 14 pectinal teeth.

Simon, unfortunately, did not determine the sex of his specimens; but since the type of *H. propinquus* is said to be smoother than specimens of *H. fuscus*, it is safe to assume that the former species is based upon the female sex.

To the above-mentioned I have to add the following new forms:—

(5) *Heterometrus arabicus*, sp. n.

*Colour* a nearly uniform yellowish brown, the legs and tail

entirely pale ochre, except for the normal brown spot at the extremity of the femur and patella in front. *Carapace* and *sterna* very weakly granular laterally. Median *eyes* larger than in *H. fuscus* and *maurus*. *Tail* narrow, second segment about as long as wide; intercarinal spaces almost smooth; keels normal, but the inferiors on the third and fourth segments scarcely denticulated, merely roughened with setal pores; vesicle larger, much wider than the fifth and as wide as the second caudal segment. *Hand* of chela ornamented above with a reticulated pattern of low ridges, passing into tubercles towards the base of the fingers and becoming obsolete on the inner edge of the hand; two very strong finger-keels on hand, the external the stronger. *Pectines* with 12 teeth; genital operculum a little wider than long. Spine-armature of fourth tarsus 10 or 9-7.

Length 10 millim.; carapace 8; tail 27; width of hand 6·7.

*Loc.* Arabia (*Mrs. Burton*).

Differs from *H. fuscus* in being much paler, much smoother, and in having the inferior keels on the third and fourth caudal segments not denticulated, the vesicle large, the hand very strongly everted, and the median eyes much larger.

In size of vesicle and of median eyes *H. arabicus* approaches *H. propinquus*, Simon (Ann. Soc. Ent. Fr. (5) ii. p. 259, 1872), from Damascus and Nablous; but since Simon noticed no difference in the carination of the inferior surface of the tail and of the hand between *H. propinquus* and *fuscus*, I cannot do otherwise than conclude that the two are alike in these particulars.

#### (6) *Heterometrus Townsendi*, sp. n.

♀.—Resembling the preceding in colour, granulation, &c., but with the hand almost entirely smooth above and much less strongly crested, the genital operculum as long as wide, the vesicle only slightly wider than the fifth and much narrower than the second caudal segment.

Total length 59 millim.; carapace 9·2; tail 28; width of hand 7·5.

*Loc.* Fort Reshire (near Bushire) and Bushire on the Persian Gulf (*F. W. Townsend*).

#### (7) *Heterometrus Boehmi*, Kraepelin.

*Heterometrus Boehmi*, Kraepelin, MT. Mus. Hamb. xiii. p. 137 (1896).  
*Scorpio Boehmi*, id. Das Tierreich, Scorp. etc. p. 125 (1899).

*Loc.* Lake Tanganyika.

Evidently very distinct from the foregoing species by the

smoothness of the inferior keels on the last abdominal and first caudal segments, the spine-armature of the tarsi, &c.

The known species may be tabulated as follows :—

- |                  |  |                    |
|------------------|--|--------------------|
| a.               | Keels of last abdominal sternum and of underside of first caudal segment smooth (♀) .....  | <i>Boehmei.</i>    |
| b.               | Keels of last abdominal sternum and of underside of first caudal segment coarsely granular (♂ ♀).  |                    |
| a <sup>1</sup> . | Genital operculum divided; terga and sterna finely granular or shagreened (♂).   |                    |
| a <sup>2</sup> . | Hand in adult wider than length of carapace, distinctly crested above; immovable finger short, triangular; a crest on underside of brachium behind; tail thick, fifth segment less than twice as long as wide, third as wide as or wider than long ..... | <i>maurus.</i>     |
| b <sup>2</sup> . | Hand narrower than length of carapace, not visibly crested above; immovable finger long; no crest on underside of brachium; tail narrow, third caudal segment longer than wide .....   | <i>palmatus.</i>   |
| b <sup>1</sup> . | Genital operculum undivided; terga and sterna not shagreened (♀).  |                    |
| a <sup>3</sup> . | Third and fourth caudal segments with inferior keels strong and granular.  |                    |
| a <sup>4</sup> . | Median eyes small, vesicle not inflated.   |                    |
| a <sup>5</sup> . | Genital operculum much wider than long, transversely elliptical; lower side of brachium with distinct smooth crest behind; hand more strongly granular and keeled, &c. ....  | <i>maurus.</i>     |
| b <sup>5</sup> . | Genital operculum heart-shaped, as long or nearly as long as wide; lower side of brachium evenly rounded behind; hand less coarsely granular and crested .....   | <i>fuscus.</i>     |
| b <sup>4</sup> . | Median eyes large; vesicle expanded .....  | <i>propinquus.</i> |
| b <sup>3</sup> . | Inferior keels of third and fourth caudal segments smooth, only uneven with setal pores; median eyes large.  |                    |
| a <sup>6</sup> . | Hand with a pair of strong smooth finger-keels, and ornamented above with a distinct network of smooth ridges .....  | <i>arabicus.</i>   |
| b <sup>6</sup> . | Hand almost smooth above, scarcely visibly sculptured; its crests obsolete .....   | <i>Townsendi.</i>  |

N.B.—Attention must be drawn to the omission from the ‘Tierreich’ of the following names which have been applied to various forms of the genus *Heterometrus*: *flavus*, *rufus*, *fuscus*, and *minor*. Apart from the possibility that these forms may in future take rank as distinct species, the recording of such names is necessary to prevent their application to new species by students who have no opportunity of consulting all the literature of the subject and look to a work of the aspirations of the ‘Tierreich’ to supply at least a complete list of the names that have been employed in each genus.